

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

# PCT

## WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing

(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference

see form PCT/ISA/220

### FOR FURTHER ACTION

See paragraph 2 below

International application No.

PCT/IB2005/000662

International filing date (day/month/year)

15.03.2005

Priority date (day/month/year)

15.03.2004

International Patent Classification (IPC) or both national classification and IPC

H01P1/18

Applicant

ENERGENIUS, INC.

### 1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☒ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

### 2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

### 3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:



European Patent Office - P.B. 5818 Patentlaan 2  
NL-2280 HV Rijswijk - Pays Bas  
Tel. +31 70 340 - 2040 Tx: 31 651 epo nl  
Fax: +31 70 340 - 3016

Authorized Officer

Den Otter, A

Telephone No. +31 70 340-2549



---

**Box No. I Basis of the opinion**

---

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
  - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
  - a. type of material:
    - ☐ a sequence listing
    - ☐ table(s) related to the sequence listing
  - b. format of material:
    - ☐ in written format
    - ☐ in computer readable form
  - c. time of filing/furnishing:
    - ☐ contained in the international application as filed.
    - ☐ filed together with the international application in computer readable form.
    - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/IB2005/000662

---

**Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

---

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application,

☒ claims Nos. 19,20

because:

☐ the said international application, or the said claims Nos.      relate to the following subject matter which does not require an international preliminary examination (*specify*):

☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos.      are so unclear that no meaningful opinion could be formed (*specify*):

☒ the claims, or said claims Nos. 19,20 are so inadequately supported by the description that no meaningful opinion could be formed.

☐ no international search report has been established for the whole application or for said claims Nos.

☐ the nucleotide and/or amino acid sequence listing does not comply with the standard provided for in Annex C of the Administrative Instructions in that:

the written form

☐ has not been furnished

☐ does not comply with the standard

the computer readable form

☐ has not been furnished

☐ does not comply with the standard

☐ the tables related to the nucleotide and/or amino acid sequence listing, if in computer readable form only, do not comply with the technical requirements provided for in Annex C-*bis* of the Administrative Instructions.

☒ See separate sheet for further details

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/IB2005/000662

---

**Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

---

1. Statement

Novelty (N)	Yes: Claims	5,9,10,14,17,18,21
	No: Claims	1-4,6-8,11-13,15,16
Inventive step (IS)	Yes: Claims	
	No: Claims	1-18,21
Industrial applicability (IA)	Yes: Claims	1-18,21
	No: Claims	

2. Citations and explanations

**see separate sheet**

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING  
AUTHORITY (SEPARATE SHEET)**

10/593214  
10/593214  
16 SEP 2005  
International application No.

PCT/IB2005/000662

**Re Item V.**

**1 Reference is made to the following documents:**

- D1: B. LAUGHLIN ET AL.: "TEM AND ELECTRICAL ANALYSIS OF SPUTTERED BARIUM STRONTIUM TITANATE (BST) THIN FILMS ON FLEXIBLE COPPER SUBSTRATES" 12TH SYMPOSIUM ON FERROELECTRIC THIN FILMS, 1 December 2003 (2003-12-01), - 4 December 2003 (2003-12-04) pages C5.3.1-C5.3.6, XP002357705 BOSTON (US)
- D2: DAWLEY J T ET AL: "DIELECTRIC PROPERTIES OF RANDOM AND <100> ORIENTED SRTIO3 AND (BA,SR)TIO3 THIN FILMS FABRICATED ON <100> NICKEL TAPES" APPLIED PHYSICS LETTERS, AIP, AMERICAN INSTITUTE OF PHYSICS, MELVILLE, NY, US, vol. 81, no. 16, 14 October 2002 (2002-10-14), pages 3028-3030, XP001142017 ISSN: 0003-6951
- D3: WO 01/37365 A (PARATEK MICROWAVE, INC) 25 May 2001 (2001-05-25)
- D4: WO 01/15260 A (PARATEK MICROWAVE, INC) 1 March 2001 (2001-03-01)
- D5: US-B1-6 292 143 (ROMANOFISKY ROBERT R) 18 September 2001 (2001-09-18)

**2 INDEPENDENT CLAIM 1**

- 2.1 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1 is not new in the sense of Article 33(2) PCT.
- 2.1.1 Document D1, which is considered to represent the most relevant state of the art to the subject-matter of claim 1, discloses (the references in parentheses applying to this document):

A frequency tunable ferroelectric microwave component comprising a flexible metallic foil substrate (page C5.3.1, title), at least one crystalline ferroelectric layer (page C5.3.1, lines 1-4) and a patterned thin metal layer (page C5.3.3, lines 18-19), such that a controllable DC bias potential may be applied between the patterned thin metal layer and the metallic foil substrate (fig. 4).

All the features described in claim 1 are therefore known from D1.

2.2 Claims 2-4,6-8.

The subject-matter of dependent claims 2-4 and 6-8 is also known from D1, more specifically from page C5.3.1, lines 1-4 (for claims 2-4), figure 1 (for claim 6), page C5.3.2, lines 9-11 and figure 1 (for claim 7) and page C5.3.2, line 9 (for claim 8). The subject-matter of claims 2-4 and 6-8 is therefore not new in the sense of article 33(2) PCT.

3 INDEPENDENT CLAIM 11

3.1 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 11 is not new in the sense of Article 33(2) PCT.

3.1.1 Document D1, which is considered to represent the most relevant state of the art to the subject-matter of claim 11, discloses (the references in parentheses applying to this document):

A method of making a thin-film ferroelectric microwave component comprising (a) depositing onto a flexible metallic foil substrate a precursor composition for a ferroelectric thin-film layer and heating until forming a ferroelectric thin-film layer (page C5.3.2, line 8-33), followed by (b) depositing onto the ferroelectric thin-film layer a patterned thin metal layer (page C5.3.3, lines 18-19).

All the features described in claim 11 are therefore known from D1.

3.2 Claims 12, 13, 15, 16.

The subject-matter of dependent claims 12, 13, 15 and 16 is also known from D1, see more specifically figure 1 (revealing a thickness for the ferroelectric layer adjacent to the range mentioned in claim 12), page C5.3.2, lines 9-11 and figure 1 (for claim 13), page C5.3.2, line 9 (for claim 15) and page C5.3.2, lines 9-37 (for claim 16).

4 INDEPENDENT CLAIM 18

4.1 The present application does not meet the criteria of article 33(1) PCT, because

the subject-matter of claim 18 does not involve an inventive step in the sense of Article 33(3) PCT.

- 4.1.1 Document D5, which is considered to represent the most relevant state of the art to the subject-matter of claim 18, discloses a method of forming an antenna comprising the sol-gel deposition of a ferroelectric thin-film layer on a substrate and forming on this layer a patterned microstrip patch having associated a bias connection and a radial stub (column 4, line 23-34; figure 1). Heating of the ferroelectric layer after depositing it onto the substrate is not explicitly described in D5, but it is a normal step in this kind of manufacturing process.
- 4.1.2 The subject-matter of independent claim 18 differs from the disclosure of D5 in that the substrate is a flexible metallic foil.
- 4.1.3 The problem to be solved by the present application may be regarded as how to be able to give the antenna a desired, e.g. non-planar shape.
- 4.1.4 D1 however reveals a ferroelectric thin film on a flexible copper substrate used for a flexible capacitor sheet intended for reconfigurable antenna arrays. Consequently the objective problem and its solution are known from D1.
- 4.1.5 Therefore the features disclosed in D5 and D1 would be combined by the skilled person, without exercise of any inventive skills in order to solve the problem posed.  
The proposed solution in independent claim 18 thus cannot be considered to be inventive (article 33(3) PCT).

**5 Claims 5, 9, 10, 14, 17, 21.**

The subject-matter added by claims 5, 9, 10, 14, 17 and 21 is known from D2 (page 2031, lines 20-31; for claims 5 and 14), from D3 (page 9, lines 7-19; for claim 9), from D4 (page 6, lines 28-30; for claims 10 and 17) and from D5 (column 3, line 52-column 4, line 34; for claim 21).

These features described in documents D2-D5 provide the same advantages as in the present application. The skilled person would therefore regard it as a normal option to include these features in the component described in document D1.

Claims 5, 9, 10, 17 and 21 therefore do not meet the criteria of Article 33(1) PCT, because the subject-matter of those claims do not involve an inventive step in the sense of Article 33(3) PCT.